Alternate Energy Revolving Loan Program (AERLP)

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ALTERNATE ENERGY REVOLVING LOAN PROGRAM (AERLP)

Encouraging the Development of Alternate Energy Production Facilities in Iowa

Program Background

- Created by Iowa legislature in May 1996
  - 1997 Iowa Code, Section 476.46
  - Amendment to the 1990 Iowa Energy Efficiency Act
- Encourages development of alternate energy production facilities in Iowa
- Funded via
  - Iowa's investor-owned utilities through 3-year special assessment on gross intrastate revenues
  - 0.085% of gross electric and gas intrastate operating revenues during 1995-1997
  - $5.9 million base funding
  - Current value is $7.42 million
- Amended in 2002 to permit up to half of the accrued interest income to be spent for program promotion & administration

AERLP Program Highlights

AERLP Funds

- up to 50% of the financed project cost
- $250,000 maximum[1]
- 0% interest rate[1]
- 20 year maximum term[1]
- negotiated repayment schedule
- repayments revolved back into fund for further loans[1]

Lender Funds

- matching funds not less than AERLP
- market rate interest rate
- loan term not less than AERLP term
- repayment collection & distribution to AERLP

[1] Legislated conditions

AERLP Eligible Technologies

- Hydroelectric
- Wind
- Solar
  - Photovoltaic
  - Hot water
- Biomass
  - Waste or refuse to fuels
  - Agricultural crops to fuels
  - Biomass feedstocks to fuels
  - Landfill gas recovery
- Ineligible Technologies
  - Passive solar
  - Geothermal systems
  - Heat pumps

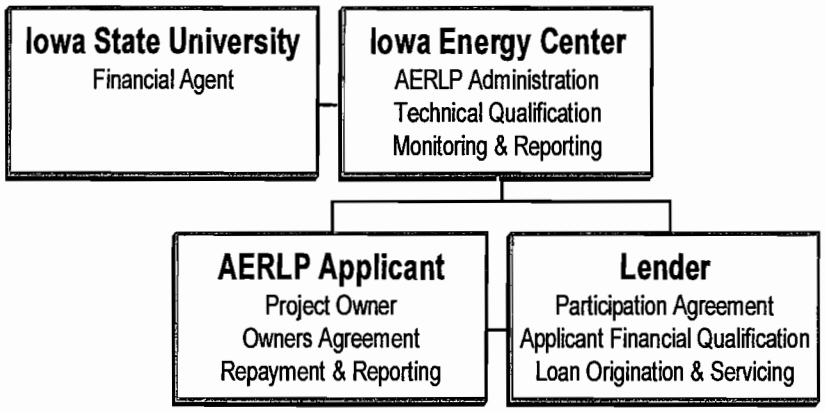
AERLP Projects

- Residential
  - Small wind turbines
  - Photovoltaics & solar hot water
  - Corn & woodburning stoves/furnaces
- Commercial & Industrial
  - Large wind turbines
  - Livestock manure digestion to power
  - Ethanol production
  - Biodiesel production
  - Hydroelectric power
  - Refuse waste to heat/power

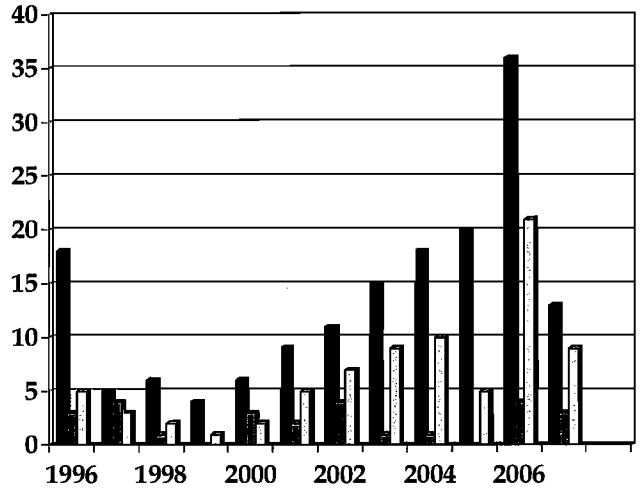
AERLP Description

- Revolving fund structure
- Competitive application process
- Funds are leveraged against matching funds
- Managed partnership with the banking community
  - Technical Qualification by the IEC
  - Financial Qualification by the lender
  - Lender originates and services a single AERLP loan
  - Participation Agreement
- Owner reporting requirements
  - Owners Agreement

AERLP Organization

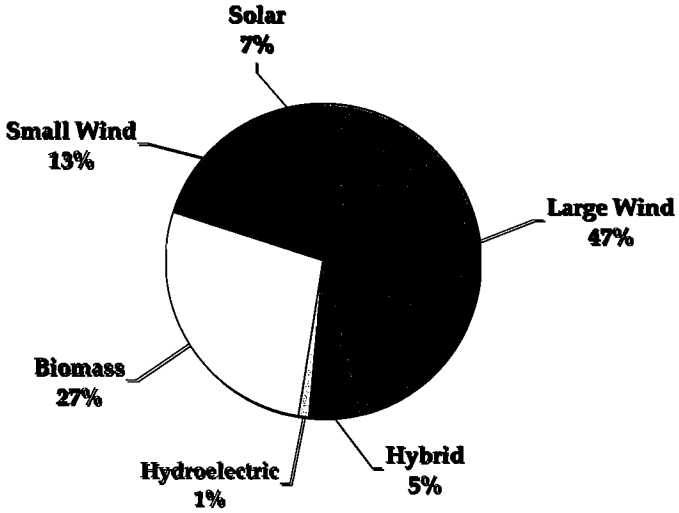


AERLP Activity



September 2007

Loan Applications by Technology



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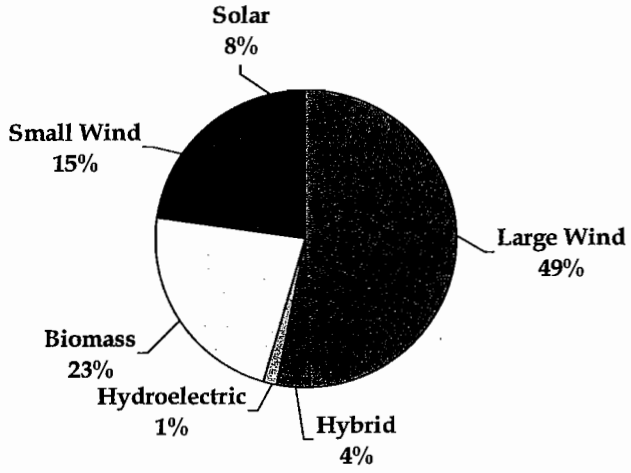
Loan Distribution by Technology



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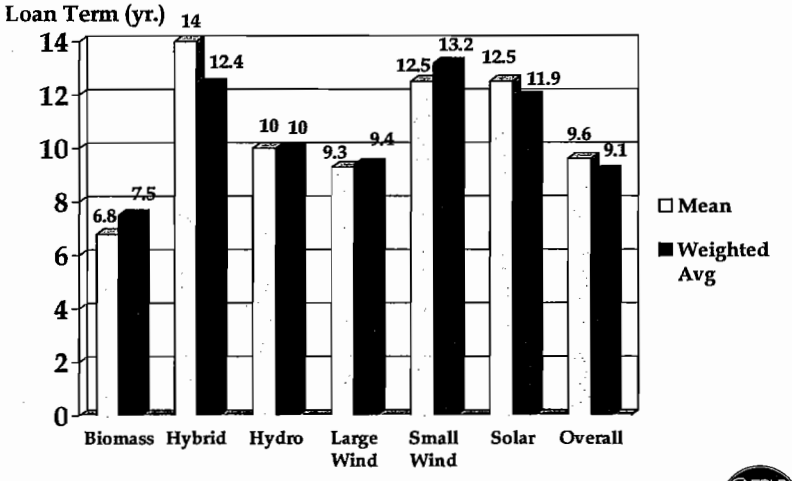
Total Distributions = $10,868,547

AERLP Average Loan Term



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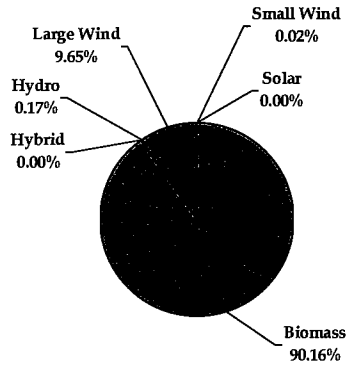
Annual Energy Generation Impact



- **Total Generation**
  - 1,717,475 MWh/year
  - 143,123 homes
- **Generation by Renewable**
  - Biomass = 1,548,449 MWh
  - Hybrid = 84 MWh
  - Hydro = 2,863 MWh
  - Large Wind = 165,741 MWh
  - Small Wind = 310 MWh
  - Solar = 28 MWh

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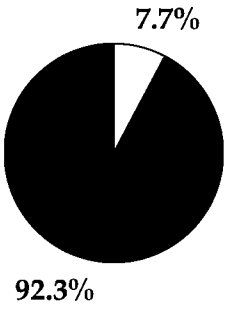
AERLP Funds Leverage



☐ AERLP Loan $ ■ Leveraged $

- **AERLP Funds**
  - $10,868,547
- **Leveraged Resources**
  - $130,878,995
- **Constructed Project Costs**
  - $141,747,542
- **Leverage Ratio**
  - 1 : 12.0

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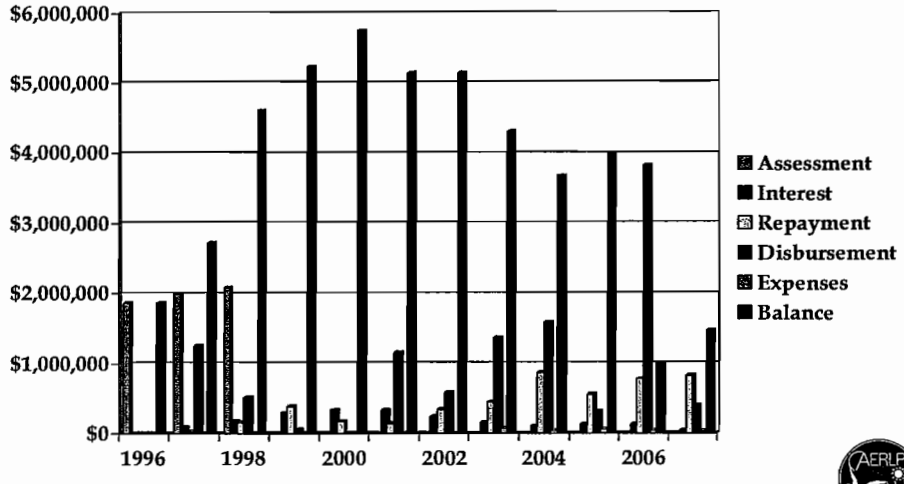
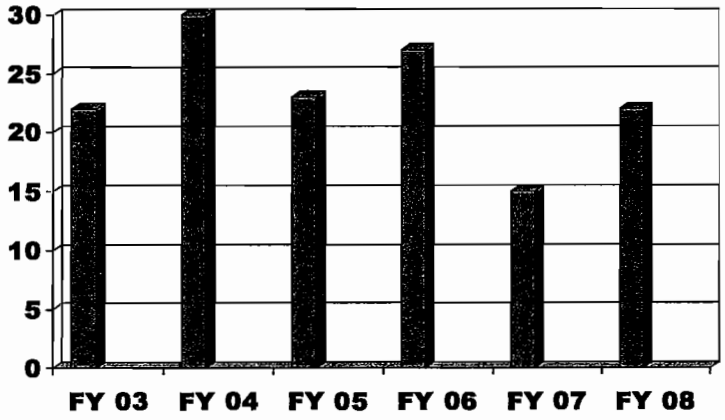
AERLP Cash Flow



July 2007

Pending Loans = $250,000

Outreach – Invited Speaking Events



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Program Sustainability

- **Unpredictable Activity**
  - Quantity of applications
  - Interest earned rate of return on unspent funds
  - Early repayments
  - Defaults
- **Sustainable Cash Flow**
  - Competitive program provides system of checks & balance
  - Predictable repayments
  - Inherent program flexibility

Case Studies

New Prairie Homestead Technologies
Linn Grove, IA

Project History

Hybrid System Technical Specifications

PV
24 .77 W Solarex panels
Zomeworks mount

Wind
10 kW Bergey Excel-R
100 ft. free guy/Rohn tilt-up
guyed lattice tower

Inverter
24 V Sensible Sine
"MagicDisclosy" generator

Supporting Equipment
48 Trojan L16MC high capacity
395 Amp batteries & cables
Trace C-40 charge controllers
2 Trace SW4548 Sinewave
5500W 48 V inverters
DC 250 Amp breakers
Hybrid IC meters
DC converter

Project Performance

Year	Production (kWh) PV	Wind	Total	PV	Value ($) Wind	Total
2000 - 01	1,661	6,516	8,177	149	586	735
2001 - 02	3,070	6,486	9,556	307	649	956
total	3,731	13,002	16,733	$326	$1,235	$1,691
avg	1,866	6,501	8,367	$179	$618	$796

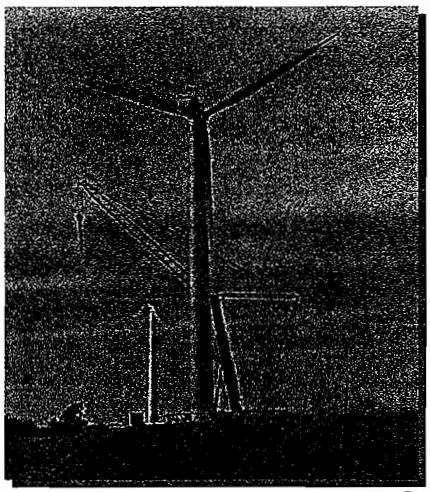
- **Production**
  - after 5 years data or
  - when loan is repaid in full
  - access from the IEC website
- **Basis**
  - start up report
  - annual reports
  - site visit(s)
  - interviews
- **Content**
  - project description
  - project cost
  - O&M costs
  - project performance
  - owner perspective

Small wind turbine project

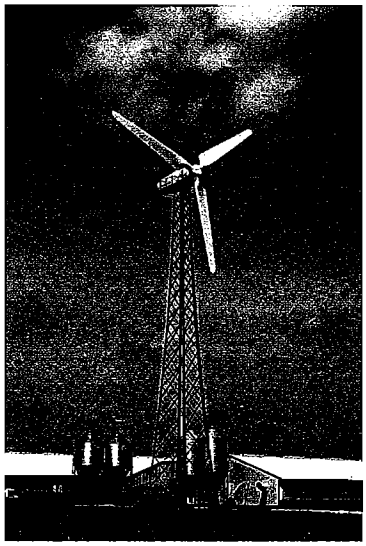
- **Owner**
  - New Prairie Technologies
- **Location**
  - rural Linn Grove
- **Equipment**
  - Bergey Excel-R (48 volt)
  - 10 kw nameplate
  - 100 ft. tower
  - stand alone installation
  - 22,000 kWh/yr capacity
  - 6,500 kWh/yr usage
- **Notes**
  - online July 31, 2000
  - exploring net metering options
  - $39,000 installed cost
  - $19,500 – 7 yr. term AERLP funds

School District Wind Turbine Project

- **Owner**
  - Spirit Lake CSD
- **Location**
  - Spirit Lake, IA
- **Equipment**
  - N.E.G. Micon 750kW
- **Notes**
  - online October 2001
  - project cost = $780,000
  - projected savings = $115,327/yr.
  - actual savings = $112,795/yr. 1
  - 6.7 year payback
  - production = 104% of usage
  - $250,000 – 10 yr. AERLP funds
  - IDNR Energy Bank Partner

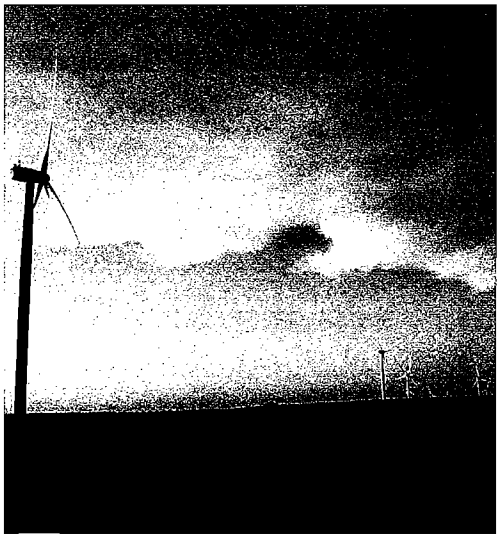


Zieser Farm, Vestas E15, 35 kW



- **Location**
  - rural Washington, IA
- **Equipment**
  - Vestas E15 rebuilt
  - 35 kw nameplate
  - 80 ft. tower
  - 90,000 kWh/yr capacity (78% usage)
  - 115,000 kWh/yr usage
- **Notes**
  - online June 2007
  - $103,350 installed cost
  - $39,550 – 10 yr. term AERLP funds
  - $24,250 USDA grant

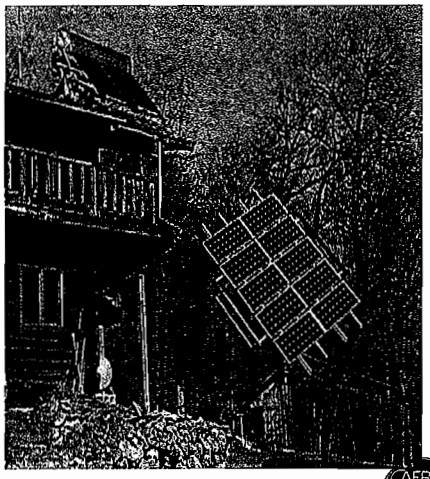
Crosswind Energy – Community Wind Farm



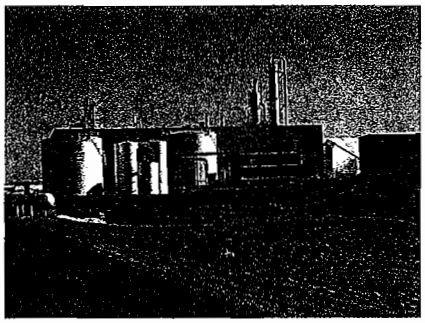
- **Owner**
  - ten Individual & locally owned LLC's
- **Location**
  - rural Ruthven, Palo Alto County
- **Equipment**
  - Suzlon S88 2.1 MW
  - 21 MW nameplate total
  - 80 meter tower, 88 meter rotor
  - 7,300,000 kWh/yr/unit capacity
  - power generation for 7,300 homes
- **Notes**
  - online June 15, 2007
  - power sale to Corn Belt Power Coop
  - ~ $2.6 million/unit installed cost
  - $200,000 – 7 yr. term AERLP funds
  - USDA Farm Bill Title 9006 grants
  - Federal & State production tax credits

Solar Installation

- **Solar hot water system**
  - Solarhart system
  - 80 gal. storage tank with heat exchanger jacket
  - Ethylene glycol anti-freeze thermosyphon exchange
- **PV system**
  - 10-Astropower panels
  - 120 watts/panel
  - Zomeworks U2000 passive tracker



Biomass Project



- **Owner:**
  - Siouxland Energy & Livestock Coop
- **Location:**
  - Sioux Center, IA
- **Plant details:**
  - Dry mill corn to ethanol plant
  - 20 million gal/yr capacity
  - $17.3 million construction cost
  - Major E-85 supplier to IA, SD, NE, MN, CA, CO, OR, NV, AZ markets